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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,935	10/27/2003	John G. Woods	LC-499	2111

7590 12/01/2005

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EXAMINER	
SELLERS, ROBERT E	

ART UNIT	PAPER NUMBER
1712	

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/692,935	WOODS ET AL.	
	Examiner	Art Unit	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *1-18 and 23-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-33* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/27/03 & 6/18/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-7, 10-18, 32 and 33, drawn to an epoxy-extended polyacrylate, classified in class 525, subclass 119.

II. Claims 8 and 9, drawn to the epoxy-extended polyacrylate of Invention I further comprising unreacted multifunctional epoxy monomer, classified in class 525, subclass 117.

III. Claims 19-22, drawn to a method of improving the fracture toughness of an epoxy-based adhesive (claim 19) and a adhesive comprising an epoxy resin, curing agent and epoxy-extended polyacrylate toughening agent (claims 20-22), classified in class 525, subclass 113.

IV. Claims 23 and 25, drawn to a method for adhesively attaching a device to a substrate, classified in class 156, subclass 330.

V. Claims 24 and 26, drawn to an adhered assembly, classified in class 428, subclass 414.

VI. Claims 27 and 29, drawn to a method for encapsulating an electronic component, classified in class 438, subclass 127.

VII. Claims 28 and 30, drawn to an encapsulated electronic article, classified in class 257, subclass 787.

The inventions are distinct from each other because:

2. Inventions I and (II or III) are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a molding formulation and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants.

3. Inventions II and III are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a molding formulation and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Inventions (I or II or III) and (IV or VI) are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product as claimed can be used in a materially different process of using that product such as a method of molding an article.

5. Inventions (IV or VI) and (V or VII, respectively) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another materially different product or (2) that the product as claimed can be made by another materially different process (MPEP § 806.05(f)). In the instant case, the process as claimed can be used to make another materially different product such as an assembly adhered with or an electronic article encapsulated with a composition containing an organopolysiloxane and an epoxy resin.

6. The method of adhering of Invention IV involves materially different process steps from the method of encapsulating of Invention VI.

Restriction for examination purposes as indicated is proper because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification.

7. This application contains claims directed to the following patentably distinct species of the claimed invention:

a) The functionalized polyacrylates of the epoxy-extended polyacrylate wherein the functionalities are defined in claim 2.

b) The multifunctional epoxy monomers of the epoxy-extended polyacrylate of claim 5.

c) Contingent upon the election of Group III, the curing agents of claim 22.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-33 are generic.

A reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

8. During a telephone conversation with Steven C. Bauman on October 31, 2005, a provisional election was made with traverse to prosecute Invention III, the bisphenol F diglycidyl ether of bisphenol F shown in Example 1 on page 16, paragraph 83 of the specification as the multifunctional epoxy monomer, a carboxylic acid-terminated polybutyl acrylate of Example 1 as the functionalized polyacrylate, and 2-propylimidazole as the curing agent, claims 19-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-18 and 23-33 are withdrawn from further consideration under 37 CFR 1.142(b) as being drawn to non-elected inventions.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 19-22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the Journal of Applied Polymer Science article by Wang et al. entitled "Photosynthesis and Application of Polyfunctional Poly(*n*-Butyl Acrylate) Elastomers for Use in Epoxy Resin Toughening," or Fock et al. Patent No. 4,460,746.

9. Wang et al. (page 790, first column, the Materials section) describes a toughening agent of a copolymer of n-butyl acrylate, acrylic acid and glycidyl methacrylate terminated with epoxy groups via reaction with N,N-di(2,3-epoxypropyl)aniline and 4-(2',3'-epoxypropoxy) benzophenone which is blended with a diglycidyl ether of bisphenol A and 4,4'-dimainodiphenylmethane as a hardener wherein the the epoxy-terminated poly(n-butyl acrylate) (i.e. ETPnBA has a number average molecular weight of up to 37,000 (page 793, first column, second paragraph).

10. Fock et al. (col. 4, line 39 to col. 5, line 20 and col. 8, Table 4, Modified Epoxide Resin Nos. 6 and 7) shows a blend of an adduct of a copolymer of n-butyl acrylate, vinyl acetate and acrylic acid having an average molecular weight of from 1000-3000 (col. 2, lines 19-21) and a bisphenol A epoxide resin having unreacted epoxide groups (col. 3, lines 15-17), an bisphenol A epoxide resin and a hardener of a polyaminoamide and, optionally, an aliphatic ether diamine.

11. The polymerized acrylic acid to a molecular weight of up to 37,000 or 3000 contains an amount of average carboxyl functionality embraced by the claimed level of at least 2.2.

12. The claimed polydispersity of from about 1.05 to about 5 is not mentioned. According to *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980) and MPEP §§ 2112-2112.02, when a reference discloses all of the limitations except for a property and it cannot be determined whether or not the reference inherently possessed the property, the burden of proof shifts to applicant to establish that the polyacrylate of Wang et al. or Fock et al. does not possess the claimed polydispersity.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Okamoto et al. Patent No. 6,489,412 is equivalent to Japanese Patent No. 3,344823 cited on page 5, lines 1-5 of the specification and discloses copolymers derived from acrylic acid (col. 7, lines 34-35) and alkyl esters such as butyl acrylate (col. 7, line 39) polymerized in the presence of a thiol chain transfer agent having a number average molecular weight of from 500-1,000,000 and a polydispersity of preferably from 1.2 to 3.0 (col. 10, lines 15-22) by controlling the polymerization velocity resulting in stable molecular terminals, maintained high molecular weight and reduced branching or gelation leading to a greater control of molecular weight and molecular weight distribution (col. 1, lines 49-63).

14. Japanese Patent Nos. 61-254680 and 11-92711 set forth epoxy resins modified with a reactive functional group-containing acrylic polymer pertinent to non-elected claims 1-7, 10-18 and 23-33 which do not require the unreacted multifunctional epoxy monomer of claims 8 and 9 as well as the epoxy resin of elected claims 19-22.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

rs
11/29/2005

ROBERT E.L. SELLERS
PRIMARY EXAMINER